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THE CHEMOTHERAPEUTIC ACTION OF STREPTOMYCIN AND PROMIN[1] IN EXPERIMENTAL TUBERCULOSIS[2]

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INTRODUCTION

Probably the first recorded antibiotic against the tubercle bacillus was the report by Vaudremer in 1912 (*1*) to the effect that cultures and mycelium of *Aspergillus fumigatus* contained a thermostable substance capable of inactivating tuberculin. In 1913 the same author reported rendering human tubercle bacilli nonpathogenic for guinea pigs by incubating a bacillary suspension at 37° C. with an extract of the filtrate of *A. fumigatus*. The recent advances in chemotherapy of bacterial infections with penicillin stimulated the search for antibiotics against the tubercle bacillus. In 1944 Smith and Emmart (*2*) reported a tuberculostatic action in vitro and a slightly favorable effect in infected guinea pigs from preparations obtained by continuous ether extraction of culture filtrates of *Penicillium notatum* grown on Raulin-Thom medium. Later Soltys (*3*) confirmed and extended Vaudremer's observations concerning an antibiotic against the tubercle bacillus derived from *A. fumigatus*, and in 1945 Asheshov and Strelitz (*4*) reported some progress on the isolation of the active component. In like manner active substances have been obtained recently from *Aspergillus flavus* (*5*) and *Aspergillus ustus* (*6*).

The systematic researches by Waksman and associates led to the isolation from *Actinomyces griseus* of an active substance designated streptomycin (*7*) with antibiotic properties against the tubercle bacillus (*8*). The pharmacologic properties of this substance have been studied by Robinson and associates (*9*) who showed that it was well tolerated by mice and rats in doses of 50,000 units per kg. of body weight daily when given parenterally over a period of 1 month.

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[1] Sodium p-p′ diaminodiphenylsulfone N-N′ didextrose sulfonate .

[2] From the Division of Physiology, National Institute of Health.

A sample of this material obtained in October 1944 through the courtesy of Dr. E. F. Robertson, Merck & Co., was tested for tuberculostatic action in vitro with good results, the minimal effective concentration being 100 units percent or approximately 0.3 mg. percent. Subsequent experiments to determine the effect of streptomycin on the incidence and extent of tubercle formation on the chorioallantois also gave results of sufficient promise to warrant an investigation of its action in experimental tuberculosis in animals.[3]

The first of the chemotherapeutic tests was made in February 1945. This was limited in scope since the material available at that time was barely sufficient to treat four guinea pigs for a period of about 30 days. In the meantime a favorable preliminary report appeared by Feldman and Hinshaw (*10*) in which they concluded that streptomycin is capable of exerting "a striking suppressive effect on the pathogenic proclivities in guinea pigs of the human variety of *Mycobacterium tuberculosis*." As additional supplies of the material became available through the cooperative efforts of the Subcommittee on Chemotherapy of the National Research Council and Merck & Co., more comprehensive studies were undertaken to ascertain the chemotherapeutic possibilities of streptomycin in experimental tuberculosis.

EXPERIMENTAL

Two series of experiments were made in guinea pigs infected with tuberculosis: the first to determine if streptomycin had any ameliorating effect; the second to ascertain its value as compared with promin, a sulfone derivative which has received considerable attention in recent years (*11*, *12*, *13*); and further to explore the possibilities of potentiation by combined treatment with two chemotherapeutic agents of diverse chemical constitution and with probably different mechanisms of action.

In the first series there were eight male guinea pigs weighing about 250 to 300 gm. They were inoculated intraperitoneally on February 9, 1945, with 1 cc. of a suspension containing 1 mg. moist weight of a human strain tubercle bacilli (A27, Henry Phipps Institute). Four of the animals served as controls and four were treated daily with 5,000 units streptomycin injected intramuscularly, beginning February 12 and extending to March 16. Little was known at the time regarding tolerance of guinea pigs for streptomycin or about absorption, retention, and elimination. This technique of treatment was adopted because it appeared to give satisfactory results, and has been used throughout. Ten days after the last treatment, or 45 days subsequent to infection, the animals were killed with chloroform, autopsied,

[3] The details of this work will be published in a separate communication by E. W. Emmart: The tuberculostatic action of streptothricin and streptomycin with special reference to the action of streptomycin on the chorioallantoic membrane of the chick embryo.

and the extent of tuberculous involvement noted and recorded according to procedures previously described (*14*).

In the second series there were 81 male guinea pigs of as uniform weight as possible (range 270 to 370 gm.). These were inoculated as in the preceding series, on April 12, 1945, and were divided into 4 groups as follows: 20 controls; 21 for treatment with streptomycin, 5,000 units intramuscularly daily; 20 for treatment with promin, 0.5 gm. per kg. daily per os; 20 for treatment with streptomycin intramuscularly and promin orally as in the preceding series.

The animals were weighed weekly. Treatment was begun the day after inoculation and continued for 3 months, until July 11. Sixty days after infection hemoglobin determinations were made to ascertain the effects of individual and combined treatments, since, as is well known, promin may induce anemia in experimental animals at the dose level administered (*12, 15*). At 70 days post infection blood levels for promin were determined in groups 3 and 4, using 5 animals in each of the groups at 3, 5, and 21 hours, respectively, following drug administration. Two cubic centimeters of blood was taken by cardiac puncture in each case, and blood levels determined electrophotometrically using the Bratton and Marshall method (*16*). At 76 to 92 days post infection all the survivors were tuberculin tested using 0.01 mg. PPD in 0.1 cc. intracutaneously, and the relative response in each of the groups evaluated in terms of (*a*) no discernible reaction, (*b*) doubtful reaction, (*c*) moderate, and (*d*) severe reaction with edema and some central necrosis. Finally at 105 to 110 days post infection, when 65 percent of the controls had died, the experiment was terminated, the animals killed with chloroform, and the incidence and extent of tuberculous involvement noted.

RESULTS

The findings in the first series of experiments in which treatment was continued for a little over 30 days and the experiment terminated 45 days after infection are summarized in figure 1. The average gain in weight for the controls during the experimental period was 86 gm., for the treated 140 gm. The average tuberculosis index for the treated group was 3.5 as against 9.5 for the controls. A breakdown of the extent of tuberculosis in the several organs most commonly involved indicates a high degree of protection of the peritoneum, liver, lungs, and spleen. The liver and lungs of only one of the treated animals showed slight to moderate degree of involvement, while all the controls had a considerable degree of tuberculosis in these organs. The peritoneum [4] was heavily involved in the controls but entirely free of infection in the treated group. In like manner

[4] The extent of tuberculous involvement of the kidneys, intestines, mesenteric glands, and testicles was rated with and included in that of the peritoneum.

there was a considerable degree of protection in the spleen, but apparently none in the omentum. It would appear that with treatment instituted 3 days after infection and continued for a period of 30 days, complete protection could not be attained since all the treated animals showed some degree of tuberculous involvement, but it was possible so to retard the progress of the disease as to reduce materially the dissemination of the tuberculous process and leave the peritoneum free of disease in all of the animals, the lungs and liver in three of the animals, and the spleen in two.

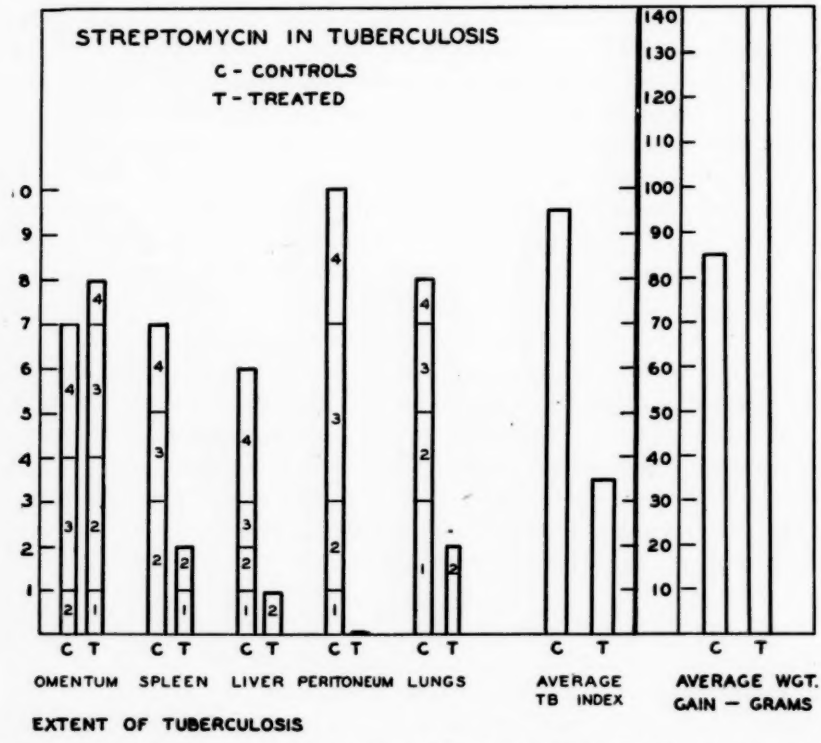

FIGURE 1.—The effect of treatment of experimentally infected guinea pigs with 5,000 units streptomycin injected intramuscularly daily. Treatment continued 32 days and experiment terminated 45 days after infection.

Results of the second series of experiments are presented in the following tables. Hemoglobin determinations made 60 days after infection and continuous treatment (summarized in table 1) indicate no deleterious effect from streptomycin. On the contrary, there was some degree of protection against the low grade of anemia incidental to the disease as well as against the anemia which may result from promin administration. There was an incidence of 24 and 36 percent for the controls and promin groups respectively in the low hemoglobin group, none in the streptomycin, and only 5 percent in the combined

TABLE 1.—*Hemoglobin levels in guinea pigs infected with human strain tubercle bacilli and treated continuously for 60 days*

Hemoglobin	Controls	Streptomycin-treated guinea pigs	Promin-treated guinea pigs	Streptomycin+promin-treated guinea pigs
Grams per 100 c. c.	*Percent*	*Percent*	*Percent*	*Percent*
11–13	24	0	36	5
13–15	40	40	52	58
15–17	36	60	12	37

treatment group. All of the streptomycin-treated animals and 95 percent of the combined-treatment group had adequate hemoglobin levels.

Blood level determinations for promin after 70 days of continuous treatment showed no untoward effects from the combined treatment. Actually, the promin levels determined at different times following the last dose were somewhat higher in the combined-treatment group than in the group receiving promin alone. This is summarized in table 2.

TABLE 2.—*Blood levels of promin after 70 days of continuous treatment in guinea pigs infected with human strain tubercle bacilli* [1]

Hours after last dose	Promin (mg. per 100 cc.)	
	Promin-treated guinea pigs	Promin+streptomycin-treated guinea pigs
3	12.0	15.2
5	12.8	15.2
21	0.5	2.0

[1] Each figure represents the average of 5 animals.

The incidence of intracutaneous tuberculin reactions in the several groups is summarized in table 3. All the surviving animals of the four groups were subjected to the test. Two of the controls died within 48 hours and both showed extensive tuberculosis. All of the remaining

TABLE 3.—*Percentage incidence of tuberculin reactions in the several groups of guinea pigs tested at 76 to 92 days post infection with human strain tubercle bacilli* [1]

	Controls	Streptomycin-treated guinea pigs	Promin-treated guinea pigs	Streptomycin + promin-treated guinea pigs
	Percent	*Percent*	*Percent*	*Percent*
Number tested	12	21	17	20
Percent mortality	16	0	0	0
Percent showing:				
No reaction	0	0	30	25
Doubtful reaction	0	0	58	25
Positive reaction	42	57	6	35
Severe reaction	42	43	6	15

[1] 0.01 mg. PPD injected intracutaneously.

controls gave moderate to severe reactions, as did all of the streptomycin group. Eighty-eight percent of the promin group and 50 percent of the combined-treatment group failed to react or at best gave a doubtful reaction. Attempts to correlate these findings with post-mortem findings 20 to 30 days later, when the experiment was terminated, failed to show a definite relationship between the extent of tuberculous involvement and the severity of the tuberculin reaction. Thirteen animals in the combined-treatment group showed no gross evidence of tuberculous involvement and 8 of them gave a positive tuberculin reaction, while in the promin group 15 of the animals that failed to react to tuberculin showed gross evidence of tuberculosis, the tuberculosis index range in this group being from 1 to 9. The evidence strongly suggests the possibility that treatment with promin suppresses the tuberculin reaction. The chemotherapeutic significance of this remains to be determined.

Tables 4 and 5 summarize the status and autopsy findings at the time the experiment was terminated, from 105 to 110 days post infection. Sixty-five percent of the controls and 15 percent in the promin group

TABLE 4.—*Summary of findings at termination of experiment, 105 to 110 days after infection with human strain tubercle bacilli*

	Controls	Streptomycin	Promin	Streptomycin + promin
Mortality percent	65	0	15	0
Number losing weight	[1] 4/7	[1] 1/21	[1] 2/17	[1] 0/20
Average gain in weight, gm.	99	298	183	252
Weight of spleens, gm:				
Range	1.5–28.8	0.6–1.7	0.9–2.7	0.6–1.3
Average	5.0	1.0	2.0	1.0
Tuberculosis index:				
Range	5–15	0–4	1–11	0–2
Average	10.0	1.9	4.1	0.5
Percent of animals with doubtful lesions or none.	0	15	5	65

[1] Numerator=number losing weight; denominator=number surviving.

TABLE 5.—*Extent and distribution of lesions (tuberculosis index) in the several tissues and organs*

Tissue	Controls	Streptomycin	Promin	Streptomycin +promin
Omentum and lymph nodes:				
Range	0–3	0–1	0–2	0–1
Average	1.0	0.7	0.6	0.1
Spleen:				
Range	0–4	0–1	0–3	0
Average	1.8	0.1	0.6	0
Liver:				
Range	1–4	0–1	0–3	0–1
Average	2.2	0.3	0.6	0.1
Peritoneum (including kidneys, intestine and testicles):				
Range	0–4	0–2	0–3	0–1
Average	2.6	0.7	1.1	0.1
Lungs:				
Range	1–4	0	0–3	0
Average	2.6	0	1.1	0

were dead, all the animals in the streptomycin and streptomycin + promin groups were alive and well. Four of the seven surviving controls were losing weight and were definitely on the decline; no serious losses of weight were seen in any of the surviving animals in the three treated groups. The average gain in weight since the time of infection was 99 gm. for the controls, 183 gm. for the promin group, 298 gm. for the streptomycin, and 252 gm. for the combined-treatment group. The average weight of the spleens of all the controls was 5.0 gm; for the promin group 2.0 gm.; and only 1.0 gm. for each of the streptomycin and the streptomycin + promin groups. The average tuberculosis index rated by procedures previously described (*14*) was 10.0 for the controls; 4.1 for the promin group; 1.9 for the streptomycin group; and only 0.5 for the combined-treatment group. All but one of the controls surviving 30 days or longer had moderate to extensive tuberculous involvement,[5] one of the animals in the promin group showed no gross evidence of infection, 3 in the streptomycin group were free of macroscopic lesions, and 13 or 65 percent of the combined-treatment group appeared free from all discernible lesions. The remaining 7 animals in this last group had a minimal amount of tubuerculosis with a rating of 1 in 5 animals and 2 in 2 of the animals. The lesions in these 7 animals usually consisted of a small localized tuberculous abscess of the small intestine or of a few miliary nodules in the testicles. In only 1 of the animals were the lymph nodes in the omentum enlarged and caseating. The spleens, livers, and lungs were free of grossly visible lesions in all the animals, and there was no involvement in the kidneys or peritoneum in any of them.

The essential data are presented in graphic form in figure 2, in which the tuberculosis index for the experimental groups is expressed on the basis of 100 for the controls.

COMMENT

The data presented in this report leave no doubt that streptomycin is a highly effective chemotherapeutic agent in checking and retarding the normal course of tuberculosis infection in guinea pigs. Under the experimental conditions of treatment 5,000 units streptomycin (approximately 10,000 to 15,000 units per kg.) injected intramuscularly daily for a period of 90 days produced a definitely greater chemotherapeutic effect than promin given in doses of 0.5 gm. per kg. daily for an equal length of time. Since the dose of promin used is about one-half the maximum tolerated dose of this drug (*12*) while the dose of streptomycin used is less than 1/20 its maximum tolerated dose [6] it follows

[5] One of the controls had a rating of 1, with a moderate degree of tuberculosis in the testicles and few miliary tubercles in the liver.

[6] Ten guinea pigs receiving a single intramuscular injection of 300,000 units per kg. survived, of 10 guinea pigs receiving 400,000 units per kg. 5 died. Three groups of guinea pigs, 3 each, receiving daily doses of 50,000, 75,000, and 100,000 units per kg. over a period of 10 days failed to show evidence of toxicity other than some depression of normal growth.

that streptomycin has a chemotherapeutic index better than 10 times that of promin, which heretofore has been probably the most effective chemotherapeutic agent in experimental tuberculosis when viewed in the light of relative safety, effectiveness, ease of administration, and freedom from toxic side actions. Neither of these chemotherapeutic agents when used individually has so far completely eradicated the disease process. Streptomycin is still too new and inadequately studied a drug to rule out the possibility of better chemotherapeutic effects (even to the point of completely eradicating the disease) with

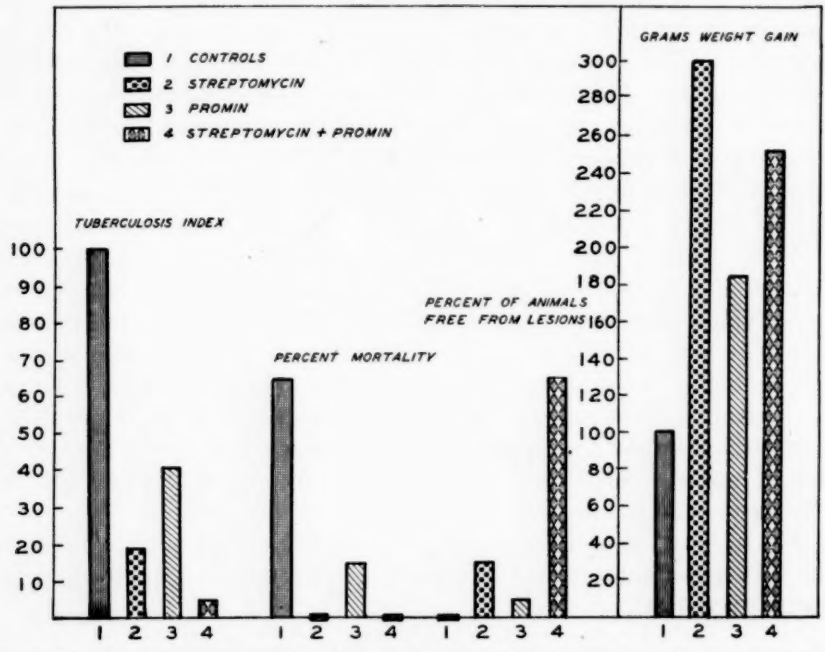

FIGURE 2.—Chemotherapeutic effect of streptomycin, promin, and a combination of the two drugs in experimental tuberculosis in guinea pigs.

the application of larger doses and better methods of administration. Enough is known about promin to enable us to state definitely that under our rigorous experimental conditions little more can be attained with this drug alone. It is significant that by the application of a suitable combination of the two chemotherapeutic agents, streptomycin and promin, we have not only been able to get better results than with either alone, but we have been able to obtain results unlike anything we have obtained heretofore in the treatment of experimental tuberculosis infections.

The results of treatment with the combination of streptomycin and promin appear to indicate a synergistic action rather than simple summation of effects. Taking into consideration the tuberculosis index data given in table 4 the chemotherapeutic efficacy of streptomycin

may be expressed numerically as 5.2 (10.0/1.9). In like manner the chemotherapeutic efficacy of promin may be expressed as 2.4 (10.0/-4.1). Simple summation of effects should give a chemotherapeutic efficacy of 7.6 for the combined treatment group. Actually the chemotherapeutic efficacy for this group was 20 (10.0/0.5), nearly three times as much as would be anticipated from simple summation. Comparison of effects by other criteria listed in table 4 points in the same direction of potentiation rather than summation.

If the experimental approach we have used is any criterion of chemotherapeutic effectiveness in man we believe our experimental results warrant the cautious application of the combined treatment in suitable clinical cases, while the search for more effective sulfones and for better methods of streptomycin administration continues.

SUMMARY

The daily intramuscular injection of 5,000 units of streptocmycin for a period of 90 days in guinea pigs infected with a human strain of tubercle bacilli has produced a chemotherapeutic effect superior to that obtained with 0.5 gm. per kg. promin given orally for the same length of time. Since the dose of promin used is about half the maximum tolerated dose while streptomycin is less than one-twentieth it appears that streptomycin has a chemotherapeutic index better than 10 times that of promin. It also seems possible that by increasing the dose of streptomycin and with better methods of administration its chemotherapeutic effectiveness may be enhanced. Using a suitable combination of streptomycin and promin it was possible to obtain results which, under our experimental conditions, have not been obtained previously.

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AN OUTBREAK OF FOOD POISONING DUE TO A NEW ETIOLOGICAL AGENT—*SALMONELLA BERTA* [1]

By George H. Hauser, M. D.,[2] W. L. Treuting, M. D., M. P. H.,[3] and L. A. Breiffelh, M. D.[4]

In recent years several new strains of *Salmonella* have been described. In 1936, Hormaeche and Salsamendi (*1*) in Montevideo, Uruguay, studying the bacterial flora of various organs of the normal hog, isolated from the mesenteric glands a new strain which they named *Salmonella berta*. These workers found the organism to be pathogenic for certain animals. However, review of the literature has failed to disclose any report of the organism having produced disease in humans.

This is an account of an outbreak of food poisoning in which pork sausage was found to be the contaminated food and *S. berta* the causative organism. The sausage was shipped by a small manufacturer in Texas to Mr. B. in New Iberia, La. It was delivered at 10 a. m. on March 21, 1942, packed in a shirt box lined with wax paper and wrapped with heavy brown paper. It was not refrigerated after receipt and not opened until 7 p. m. of the same day. At that time a portion, consisting of about 2 pounds, was given to a friend, Mr. H., and the remainder was taken to a nearby restaurant where a portion was fried and served to five people. The proprietor broiled a small portion for himself. A helper ate some pieces left over from that eaten by the party of five.

Mr. H. took his portion to the home of a relative, Mr. D., where

[1] From the Louisiana State Department of Health.
[2] Director, Division of Laboratories.
[3] Director, Division of Preventive Medicine.
[4] Formerly Director, Iberia Parish Health Unit, now on military leave.

some was fried and eaten by him and his wife. Mr. and Mrs. H. then went to their home in another city, leaving the balance of the sausage with the D. family who refrigerated it overnight and served it to their family of six on the next day, March 22, 1942.

Of the 15 who ate of the sausage, only 1, the restaurant proprietor, did not become ill. At the time of investigation, only 9 of the 14 were located and questioned (table 1). The remaining 5 known to have eaten of the sausage had left the city and were not traced.

These nine became ill in from 5 to 48 hours after eating the sausage, six of them in 10 hours or less. Three of the cases, members of the family group who ate of the sausage on Sunday, March 22, 1942, became ill 18, 27, and 48 hours afterward.

The onset was sudden, with nausea and vomiting, followed by diarrhea, chills and fever, and occasionally tenesmus. Two cases varied from this in that diarrhea only was present. Both of them had positive stools for *S. berta*. The diarrhea was relatively marked in all cases but none had blood in the stools. Fever was a common symptom, the temperature rising to 102° F. in some cases. Two of the cases, both young white males, were sufficiently ill to be hospitalized. The acute symptoms subsided in from 3 to 8 days, leaving the patients in a weakened condition. All cases recovered.

After a preliminary investigation of the outbreak, on March 24, by the local Parish Health Unit, it was felt that all of the individuals were suffering from food poisoning and that the sausage was the probable agent. Several pounds of the remaining sausage were collected and shipped to the State Central Laboratory for bacteriological examination, where it was received March 27, 1942.

A Gram negative, motile organism giving the following biochemical reactions was isolated from cultures made from various portions of the sausage:

Acid and gas from: Dextrose, mannitol, maltose, dulcitol, rhamnose, sorbitol, arabinose, xylose, trehalose.
No action from: Lactose, adonite, inositol, salicin.
Simmons citrate agar: Positive.
Phenol red tartrate agar: Positive.
Gelatin: No liquefaction.
No H_2S produced.
Indol not formed.

As soon as it became apparent in the laboratory that the contaminating organism might belong to the *Salmonella* group, it was recommended to the Health Unit director that he collect stool specimens on those affected.

Stools from five of the cases, including the two hospitalized, were collected on March 31, 1942, and sent to the central laboratory where they were received April 2, 1942. Following the isolation of

TABLE 1.—*Chart of findings and results of laboratory examination by cases*

Case	Color	Sex	Age	Date of onset	Incubation period	Duration of illness	Symptoms					Stool		Serum		
							Nausea	Vomiting	Diarrhea	Chills	Fever	Date collected	*S. berta*	Date collected	Agglutination *S. berta* (titer)	Remark
				1942	*Hours*	*Days*						*1942*		*1942*		
J. B.	W	M	34	Mar. 22	10	4	+		+	+	+	Apr. 21	Positive	Apr. 15	Positive; 1:160	
S. B.	W	M	26	do	10	7		+	+	+	+					
C. J.	N	M	13	do	10	7	+		+		+	Apr. 16	Negative	do	Positive; 1:180	Relatively mild.
V. D.	W	F	21	do	9	3	+	+	+	+	+	do	Positive	do	Positive; 1:160	
R. D.	W	M	10	do	8	8	+	+	+	+	+	Mar. 31	do			Hospitalized.
												Apr. 16	do			
L. D.	W	M	18	do	5	8	+	+	+	+	+	Mar. 31	Negative			Do.
L. D.	W	F	15	Mar. 24	48	4			+			do	do	Apr. 15	Negative	Relatively mild.
												Apr. 21	Positive			
Mrs. J. L. D.	W	F	52	Mar. 23	27	6	+	+	+	+	+	Mar. 31	do			
												Apr. 16	do			
Mr. J. L. D.	W	M	62	do	18	4			+			Mar. 31	Negative			Do.
												Apr. 16	Positive			

S. berta in two of these five specimens,[5] further stool specimens were requested on these five cases and on all of the others if possible. These specimens were collected on April 16 and 21 and received in the laboratory on April 20 and 27, respectively.

Stools from a total of eight of the individuals were submitted for bacteriological examination and an organism identical in character and giving the same biochemical reaction as that isolated from the sausage was recovered from the stools of six of the eight.

The organism gave positive agglutination reactions with enteritidis serum, but since its biochemical reactions were not identical with those of *Salmonella enteritidis*, cultures of the organism isolated from both sausage and stools were sent to Dr. R. P. Edwards, of the National Salmonella Center, Lexington, Ky., and were classified as *S. berta*.

To complete the investigation, samples of blood for agglutination tests were collected from as many patients as possible. Blood specimens from three out of four of these patients collected approximately one month after onset of the disease agglutinated *S. berta*.

In comparing the antigenic formula of *S. enteritidis* IX, XII: gm., with that of *S. berta* IX, XII: fgt., it can readily be seen why it agglutinated with *S. enteritidis* serum (*2*, *3*).

In reviewing the literature, it was found that this organism had previously been isolated by Hormaeche and Salsamendi (*1*) and Hormaeche and Peluffo (*4*) from mesenteric glands of normal pigs in Montevideo, Uruguay. After intensive studies of the organism they concluded that it could not be included in any of the known *Salmonella* types because of its antigenic formula.

Kauffman (*5*) studied the strain and accepted the formula proposed by Hormaeche as *S. berta*, IX, XII: fgt.

Hormaeche, Peluffo, and Salsamendi (*6*) also studied the pathogenicity of *S. berta* and found it to be pathogenic for the rabbit and rat. However, they state that "until now we have only found *S. berta* in a normal pig, we cannot then affirm the spontaneous pathogenic action of this type for the pig or man."

As the occurrence of *S. berta* in this country in animals or man had not previously been reported, an investigation of the source of the pork used in the sausage was conducted. The Federal Bureau of Animal Industry reported nothing to indicate that any of the hogs used were imported; but, on the contrary, that they were of domestic stock.

Since the recovery of *S. berta* from these cases, it has been found in New York City and Florida. A personal communication from the National Salmonella Center in New York State (*7*) describes a case of

[5] In the cases of L. D. (W. F., 15) and L. D. (W. M., 18) the specimens collected on March 31, 1942, were reported as negative for *S. berta*. It was noted at the time of receipt of the specimens in the laboratory that there was "excessive feces in bottle."

"chronic diarrhea with intermittent attacks for the past years with blood and mucous in the stool" in which *S. berta* was isolated from the stools. In another communication (*8*), Dr. Edwards states that he has typed four other cultures of *S. berta* received from the State of Florida, two from feces in enteric fevers, one from feces in gastroenteritis, and one from a stool culture of a normal human carrier.

SUMMARY

An outbreak of food poisoning due to *S. berta* in sausage is described.

The illness was characterized by nausea and vomiting, followed by diarrhea, chills and fever, and occasionally tenesmus.

S. berta was isolated from the sausage and from stool specimens submitted.

Blood specimens showed agglutinins for *S.berta*.

Evidence has been presented to show *S.berta* pathogenic for man.

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PROVISIONAL MORTALITY FROM SPECIFIC CAUSES IN 1944 AND PRECEDING YEARS

Annual mortality rates for specific causes for the 5 years 1940–44 are shown in table 1 for a group of 39 States and the District of Columbia.[1] These data are made available through a cooperative arrangement with the respective States which furnish provisional tabulations of current birth and death records to the Public Health Service. For several reasons the rates are provisional and will differ from final figures subsequently published by the Bureau of the Census. To keep the comparision of changes from year to year on the same basis, the rates for preceding years represent the same type of provisional data as are used for the 1944 figures. Populations are estimates as of July 1 as published by the Bureau of the Census; they

[1] Detailed tables showing rates for each State are available in multilithed form upon request. They are not printed here because of lack of space.

include members of the armed forces stationed in each State but exclude those outside of the country.

TABLE 1.—*Summary of mortality trends from certain causes in a group of 40 States*[1] *1940–44 (estimated population July 1, 1944, 110,964,645) (rates provisional for all years)*

Diseases (numbers in parentheses are from the International List of Causes of Death, 1938 revision)	1944	1943	1942	1941	1940
	Rate per 1,000 population				
Deaths, all causes	10.6	10.9	10.3	10.4	10.6
Births, exclusive of stillbirths	20.4	21.3	20.6	18.5	17.5
	Rate per 1,000 live births				
Infant mortality (live births, 1944, 2,264,148)	40	40	40	45	45
Maternal mortality	2.1	2.3	2.5	3.0	3.5
	Rate per 100,000 population				
Typhoid and paratyphoid fever (1, 2)	0.38	0.49	0.51	0.77	1.01
Dysentery (27)	1.20	1.25	1.28	1.93	1.90
Diarrhea and enteritis under 2 years (119)	7.29	6.89	6.40	7.38	6.99
Appendicitis (121)	5.52	5.76	6.28	8.15	10.01
Scarlet fever (8)	.32	.34	.33	.35	.51
Diphtheria (10)	.73	.77	.83	.89	1.00
Whooping cough (9)	1.29	2.40	1.77	2.61	1.97
Measles (35)	1.38	.93	.80	1.56	.47
Cerebrospinal (meningococcus) meningitis (6)	2.12	2.12	.64	.48	.44
Acute poliomyelitis and acute polioencephalitis (36)	1.06	.76	.38	.56	.70
Acute infectious encephalitis (lethargic) (17)	.44	.49	.43	.72	.52
Malaria (28)	.32	.34	.47	.63	.74
Pellagra (69)	.66	.87	1.00	1.17	1.28
Tuberculosis, all forms (13–22)	39.7	41.1	41.4	42.8	43.8
Syphilis (30)	10.3	11.0	11.2	12.9	13.9
Influenza (grippe) (33)	12.9	12.7	8.0	15.8	14.5
Pneumonia (107–109)	47.4	52.5	46.4	47.7	54.3
Cancer, all forms (45–55)	130.2	125.8	123.5	121.0	120.0
Diabetes mellitus (61)	27.1	28.0	25.8	25.8	26.8
Intracranial lesions of vascular origin (83)	94.2	95.9	90.9	87.4	90.4
Diseases of the heart (90–95)	320.0	323.8	298.0	291.4	293.9
Nephritis, all forms (130–132)	68.6	73.9	71.5	73.4	77.2
All accidents, including automobile accidents (169–195)	66.4	68.8	67.3	73.1	70.1
Automobile accidents (170a, b, c)	16.3	16.0	19.5	28.0	24.4

[1] Includes all States except Alabama, Arizona, Arkansas, California, Mississippi, New Hampshire, Oregon, Washington, and West Virginia.

The data in table 1 are crude rates which take no account of changes since 1940 in the age composition of the population. Such changes, however, have been large and of a character which affects the crude death rates considerably. Specifically, the withdrawal from the population of the United States, for foreign service in the armed forces, of several million men of the age groups which have the lowest death rates leaves in this country an abnormal population composed of a considerably higher percentage of old people than was true at the time of the 1940 census. Since withdrawals continued throughout 1944 with few soldiers returning to the United States, the effect on the crude mortality rates was cumulative; thus crude rates for 1944 are less comparable with those for 1940 than were rates for 1943 and 1942.

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Table 2 shows for the more important causes death rates for 1943 and 1944 that have been adjusted [2] for this changing age distribution of the population. The crude death rates per 1,000 population from all causes for 1944 and 1943 were 10.6 and 10.9, respectively, as compared with 10.6 for 1940. When these rates are adjusted for changing age distribution they are 9.8, 10.4, and 10.6 for 1944, 1943, and 1940, respectively. The 1944 adjusted rate from all causes is only 93 percent of the crude rate and the 1943 rate is 95 percent of the crude rate.

TABLE 2.—*Crude and adjusted death rates for certain diseases, 1944 and prior years*

Diseases	Age adjusted (40 States)			All States	Crude (40 States)		Ratio of adjusted to crude rate	
	1944	1943	1940	1940	1944	1943	1944	1943
	Rate per 1,000 population							
All causes	9.8	10.4	10.6	10.8	10.6	10.9	0.928	0.954
	Rate per 100,000 population							
Cancer, all forms	121.0	120.1	119.9	120.1	130.2	125.8	.929	.955
Diabetes mellitus	25.1	26.7	26.8	26.6	27.1	28.0	.926	.953
Diseases of the heart	295.0	307.6	293.9	292.3	320.0	323.8	.922	.950
Intracranial lesions of vascular origin	86.5	90.9	90.4	90.9	94.2	95.9	.918	.948
Nephritis, all forms	63.3	70.3	77.2	81.4	68.6	73.9	.923	.951
Pneumonia	43.1	49.3	54.3	54.9	47.4	52.5	.909	.939
Tuberculosis, all forms	39.4	40.8	43.8	45.8	39.7	41.1	.992	.993
Accidents (other than automobile)	48.2	51.6	45.7	68.2	50.1	52.8	.962	.975

Rates for cancer, diabetes, heart disease, nephritis, and intracranial lesions of vascular origin all show approximately the same percentage reduction by reason of age adjustment; the 1943 adjusted rates are approximately 95 percent of the respective crude rates, and the 1944 adjusted rates are approximately 93 percent of the crude rates. Since these diseases all have a roughly similar age curve of mortality, with exceptionally high rates in the oldest ages, this rough similarity in the percentage reduction by reason of the adjustment

[2] The adjustment of the rate for age changes since 1940 is done as follows: Death rates for each specific age group in 1940 are multiplied by the 1944 estimated population for that age group to obtain an expected number of deaths at the 1940 age-specific rates. These expected deaths for specific ages are added to get a figure for all ages which is divided by the 1944 estimated population for all ages to obtain an expected death rate in 1944. This expected rate represents the crude death rate that would occur in 1944 if the age-specific death rates were identical with those in 1940. Any difference between this expected rate for all ages for 1944 and the actual rate for all ages in 1940, therefore, represents the result of changes in the age composition of the population since 1940. For example, if the actual 1940 rate for all ages is 95 percent of the expected rate for 1944, it means that the actual observed rate in 1944 can be corrected for age changes by multiplying by 0.95. This multiplier, which is called the "adjustment factor," is obtained as follows:

$$\text{Adjustment factor} = \frac{\text{Actual death rate in 1940 (all ages)}}{\text{Expected death rate in 1944 (all ages)}}$$

Thus if age changes will increase the 1944 crude rate for all ages by 5 percent without any change in the age-specific death rates, the actual crude rate for 1944 must be reduced by approximately that percentage to make it comparable with the 1940 rate. This process eliminates the change in the crude death rate that is due to age changes and indicates what the trend has been when the effects of age changes are eliminated. Adjustments for 1943 are, of course, made by an identical method using population estimates for that year.

was to be expected. The cumulative effect as more young adult males were sent abroad is illustrated by the fact that adjustment for age makes a larger difference in 1944 than in 1943.

Age adjustment had considerable effect on the pneumonia rate, the adjusted rate in 1944 being only 91 percent of the crude rate. On the other hand, adjustment for age had little or no effect on the tuberculosis rate, the adjusted rates for 1944 and 1943 both being better than 99 percent of the crude rates. Accidents other than automobile are also not greatly affected by this process, the adjusted rates in 1944 and 1943 being 96 and 98 percent of the respective crude rates for those years.

DEATHS DURING WEEK ENDED SEPTEMBER 1, 1945

[From the Weekly Mortality Index, issued by the Bureau of the Census, Department of Commerce]

	Week ended Sept. 1, 1945	Corresponding week, 1944
Data for 93 large cities of the United States:		
Total deaths	8,548	7,610
Average for 3 prior years	7,747	
Total deaths, first 35 weeks of year	316,984	320,099
Deaths under 1 year of age	638	615
Average for 3 prior years	620	
Deaths under 1 year of age, first 35 weeks of year	21,211	21,688
Data from industrial insurance companies:		
Policies in force	67,342,877	66,720,177
Number of death claims	14,013	12,009
Death claims per 1,000 policies in force, annual rate	10.9	9.4
Death claims per 1,000 policies, first 35 weeks of year, annual rate	10.4	10.2

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

REPORTS FROM STATES FOR WEEK ENDED SEPTEMBER 8, 1945

Summary

For the second consecutive week a decrease was reported in the incidence of poliomyelitis for the country as a whole. Of a total of 891 cases reported for the current week, as compared with 917 last week, 1,498 for the corresponding week last year, and 758 for the 5-year (1940-44) median, 453, or 51 percent, occurred in the Middle Atlantic and East North Central areas. Of 24 States reporting 9 or more cases each, 11 reported an aggregate increase of 92 cases, while the other 13 States reported a decrease of 124 cases. States reporting the largest increases are Illinois (from 94 to 131) and Washington (22 to 33). The largest decreases were reported in New York (138 to 114), New Jersey (96 to 60), and Utah (34 to 23). Of the total of 7,047 cases reported to date this year, 4,615 occurred during the past 6 weeks (since July 28). For the corresponding periods last year the figures are, respectively, 10,972 and 7,912. In the 10-year period 1935–44, the peak of incidence of this disease, based on the date of reports, occurred 6 times by the end of the second week of September.

Of the total of 73 reported cases of meningococcus meningitis, as compared with 59 cases last week and 91 for the next earlier week, New York and Ohio reported 6 cases each, and Illinois, Texas, and California, 5 each. The total to date this year is 6,399, as compared with 13,481 for the same period last year and a 5-year median of 2,541.

The incidence to date of diphtheria, the dysenteries, tularemia, undulant fever, and whooping cough is above that for last year.

An aggregate of 8,120 deaths was reported for the week in 93 large cities in the United States, as compared with 8,549 for the preceding week, 7,673 for the corresponding week last year, and a 3-year (1942–44) average of 7,550. The total to date is 325,105, as compared with 327,682 for the corresponding period last year.

Telegraphic morbidity reports from State health officers for the week ended September 8, 1945, and comparison with corresponding week of 1944 and 5-year median

In these tables a zero indicates a definite report, while leaders imply that, although none was reported, cases may have occurred.

Division and State	Diphtheria			Influenza			Measles			Meningitis, meningococcus		
	Week ended—		Median 1940–44	Week ended—		Median 1940–44	Week ended—		Median 1940–44	Week ended—		Median 1940–44
	Sept. 8, 1945	Sept. 9, 1944		Sept. 8, 1945	Sept. 9, 1944		Sept. 8, 1945	Sept. 9, 1944		Sept. 8, 1945	Sept. 9, 1944	
NEW ENGLAND												
Maine	0	0	1				3	0	7	1	0	0
New Hampshire	0	0	0				0	0	0	0	0	0
Vermont	2	1	1				1	1	4	0	0	0
Massachusetts	3	2	2				28	13	34	0	3	2
Rhode Island	0	2	0	23	7		0	4	4	2	0	1
Connecticut	0	0	0			1	2	13	10	3	3	1
MIDDLE ATLANTIC												
New York	13	6	6	[1] 2		[1] 1	10	36	71	6	17	7
New Jersey	4	0	3		5	5	14	5	33	2	6	4
Pennsylvania	2	4	5	1	4		31	21	33	4	11	4
EAST NORTH CENTRAL												
Ohio	6	5	5	2	5	6	7	8	18	6	2	2
Indiana	5	11	4	2		1	6	1	5	3	1	1
Illinois	4	3	9	9		3	54	10	23	5	3	2
Michigan [2]	9	3	3			1	18	17	23	2	3	1
Wisconsin	2	0	0	9	6	13	20	27	54	2	2	1
WEST NORTH CENTRAL												
Minnesota	8	7	6				6	1	9	1	2	0
Iowa	0	1	3				0	2	3	0	1	1
Missouri	2	2	4			1	6	6	6	1	1	1
North Dakota	5	0	1			1	0	0	0	0	0	0
South Dakota	6	3	3				2	2	2	1	0	0
Nebraska	1	0	1	5	5	1	3	3	3	0	1	0
Kansas	5	4	3			2	6	4	3	1	0	1
SOUTH ATLANTIC												
Delaware	0	0	0				1	0	1	0	1	0
Maryland [2]	12	1	1	1	1	1	7	6	9	1	1	2
District of Columbia	0	0	1				0	2	4	0	1	1
Virginia	11	13	12	[1] 119	75	76	3	10	10	1	2	2
West Virginia	9	2	7		3	3	0	3	3	0	2	2
North Carolina	41	13	34				1	5	10	2	2	1
South Carolina	33	12	15	176	110	120	5	11	11	1	2	1
Georgia	25	8	19	3	13	13	1	2	2	1	5	1
Florida	5	5	5			1	1	12	4	1	1	0
EAST SOUTH CENTRAL												
Kentucky	35	5	5				9	2	6	3	3	1
Tennessee	14	4	12	7	1	3	0	4	17	1	1	2
Alabama	14	30	30	14	1	3	0	0	3	3	2	1
Mississippi [2]	27	13	10							2	3	2
WEST SOUTH CENTRAL												
Arkansas	10	9	9	4	18	4	5	0	5	0	1	0
Louisiana	8	9	5	139	2	2	2	0	2	1	0	0
Oklahoma	6	7	6	7	1	15	3	1	2	1	3	0
Texas	50	32	32	433	356	273	38	25	25	5	2	1
MOUNTAIN												
Montana	0	0	0	5	10	1	0	0	2	2	0	0
Idaho	2	0	0	4			22	2	0	0	0	0
Wyoming	0	0	0				2	4	4	0	0	0
Colorado	0	6	8	3	1	4	3	5	5	2	4	1
New Mexico	2	4	2		1		2	5	5	0	0	0
Arizona	2	1	1	11	17	21	2	2	2	0	0	0
Utah [2]	0	0	0			2	37	2	6	1	0	0
Nevada	0	1	0				0	0	0	0	[3]	0
PACIFIC												
Washington	6	2	2				27	11	8	0	3	1
Oregon	2	1	1		7	2	18	12	12	0	2	1
California	19	7	8	10	5	9	59	92	55	5	12	1
Total	410	239	314	989	654	654	465	392	576	73	110	46
36 weeks	9,304	7,451	8,192	73,299	340,323	170,447	103,024	592,714	540,027	[3] 6,401	13,481	2,541

[1] New York City only.
[2] Period ended earlier than Saturday.
[3] Correction: Massachusetts, week ended Sept. 1, meningococcus meningitis 2 cases (instead of 0).

Telegraphic morbidity reports from State health officers for the week ended September 8, 1945, and comparison with corresponding week of 1944 and 5-year median—Con.

Division and State	Poliomyelitis			Scarlet fever			Smallpox			Typhoid and paratyphoid fever [4]		
	Week ended—		Median 1940–44	Week ended—		Median 1940–44	Week ended—		Median 1940–44	Week ended—		Median 1940–44
	Sept. 8, 1945	Sept. 9, 1944		Sept. 8, 1945	Sept. 9, 1944		Sept. 8, 1945	Sept. 9, 1944		Sept. 8, 1945	Sept. 9, 1944	
NEW ENGLAND												
Maine	10	0	2	23	9	5	0	0	0	0	0	1
New Hampshire	1	6	0	5	0	2	0	0	0	0	0	0
Vermont	8	2	2	0	3	2	0	0	0	0	4	2
Massachusetts	30	42	18	41	48	48	0	0	0	0	4	2
Rhode Island	1	1	1	0	2	2	0	0	0	0	0	1
Connecticut	9	13	6	4	5	8	0	0	0	0	1	1
MIDDLE ATLANTIC												
New York	114	581	68	92	48	56	0	0	0	8	12	12
New Jersey	60	50	22	10	9	26	0	0	0	2	2	3
Pennsylvania	62	130	11	38	48	47	0	0	0	12	12	15
EAST NORTH CENTRAL												
Ohio	33	92	33	63	61	52	0	0	0	7	8	8
Indiana	28	23	16	12	19	16	0	0	0	2	2	5
Illinois	131	45	44	50	44	44	1	0	0	4	5	9
Michigan [3]	11	75	34	36	33	32	0	0	0	1	3	6
Wisconsin	19	20	14	47	24	38	1	0	0	0	0	1
WEST NORTH CENTRAL												
Minnesota	17	48	14	11	19	18	0	0	0	0	1	0
Iowa	9	25	23	19	22	15	0	1	0	2	0	1
Missouri	31	14	14	18	8	13	0	0	0	3	3	8
North Dakota	5	7	1	6	2	2	0	0	0	0	0	0
South Dakota	1	0	1	0	1	4	0	1	0	0	0	0
Nebraska	7	11	11	10	6	4	0	0	0	0	0	0
Kansas	13	7	7	18	18	21	0	0	0	2	3	2
SOUTH ATLANTIC												
Delaware	3	12	0	2	1	1	0	0	0	1	0	2
Maryland [3]	[5] 5	32	2	15	19	11	0	0	0	5	2	2
District of Columbia	4	17	2	3	9	3	0	0	0	0	0	0
Virginia	30	67	15	68	23	22	0	0	0	10	6	11
West Virginia	9	24	3	53	45	32	0	0	0	1	5	8
North Carolina	11	26	7	30	36	38	0	0	0	3	4	4
South Carolina	6	4	3	9	5	7	0	0	0	7	2	8
Georgia	3	1	1	8	6	16	0	0	0	10	5	5
Florida	0	4	0	3	8	2	0	0	0	9	2	1
EAST SOUTH CENTRAL												
Kentucky	4	33	17	14	14	20	0	0	0	10	5	11
Tennessee	30	10	10	30	13	25	0	1	0	36	1	18
Alabama	4	5	2	19	21	16	0	0	0	2	4	4
Mississippi [3]	1	9	4	9	12	9	0	0	0	4	8	10
WEST SOUTH CENTRAL												
Arkansas	5	0	1	6	5	3	0	0	0	7	9	9
Louisiana	7	5	3	13	1	3	0	0	0	2	15	15
Oklahoma	10	1	1	11	6	11	0	0	0	6	1	12
Texas	30	11	6	46	22	20	0	0	0	10	24	24
MOUNTAIN												
Montana	7	6	1	2	4	6	0	0	0	2	0	0
Idaho	1	0	0	3	4	3	0	0	0	4	3	1
Wyoming	2	0	0	3	0	1	0	0	0	0	0	0
Colorado	23	6	3	6	17	14	0	0	0	0	4	3
New Mexico	1	3	1	3	4	1	0	0	0	3	0	2
Arizona	1	0	0	0	1	1	0	0	0	1	0	3
Utah [3]	23	0	0	6	2	3	0	0	0	1	0	0
Nevada	1	0	0	0	1	0	0	0	0	0	0	0
PACIFIC												
Washington	33	7	7	20	18	11	0	1	0	1	0	1
Oregon	7	11	6	7	8	6	0	0	0	2	1	1
California	30	12	12	87	61	42	0	0	0	5	5	4
Total	891	1,498	758	979	795	795	2	4	2	185	166	202
36 weeks	7,047	10,972	4,611	137,174	149,688	100,121	275	311	625	3,296	3,762	4,700

[3] Period ended earlier than Saturday.

[4] Including paratyphoid fever reported separately as follows: Illinois, 1; Virginia, 3; South Carolina, 1; Georgia, 2; Florida, 1; Kentucky, 1; Louisiana, 1; Texas, 2; Montana, 1; Utah, 1; California, 1.

[5] 1 June case included, delayed report.

Telegraphic morbidity reports from State health officers for the week ended September 8, 1945, and comparison with corresponding week of 1944 and 5-year median.—Con.

Division and State	Whooping cough			Week ended September 8, 1945							
	Week ended—		Median 1940-44	Dysentery			Encephalitis, infectious	Rocky Mt. spotted fever	Tularemia	Typhus fever, endemic	Undulant fever
	Sept. 8, 1945	Sept. 9, 1944		Amebic	Bacillary	Unspecified					
NEW ENGLAND											
Maine	20	10	16	0	0	0	0	0	0	0	2
New Hampshire	0	0	0	0	0	0	0	0	0	0	0
Vermont	24	29	16	0	0	0	0	0	0	0	1
Massachusetts	0	55	72	0	3	0	0	0	0	0	0
Rhode Island	20	7	7	0	0	0	0	0	0	0	0
Connecticut	43	53	44	0	0	0	0	0	0	0	2
MIDDLE ATLANTIC											
New York	293	121	266	4	17	0	1	1	0	0	0
New Jersey	144	44	115	0	0	5	0	0	0	0	4
Pennsylvania	122	48	185	0	0	0	0	1	0	0	3
EAST NORTH CENTRAL											
Ohio	221	116	160	1	0	0	1	0	0	0	1
Indiana	25	24	26	2	0	3	1	0	0	0	4
Illinois	133	109	176	11	3	0	3	0	1	0	5
Michigan [1]	93	47	190	2	4	0	0	0	0	0	6
Wisconsin	63	106	184	0	0	0	0	0	0	0	4
WEST NORTH CENTRAL											
Minnesota	28	43	48	1	0	0	0	0	0	0	1
Iowa	6	6	25	0	0	0	0	0	0	0	0
Missouri	12	29	29	0	0	1	0	0	0	0	3
North Dakota	2	6	6	0	0	0	0	0	0	0	0
South Dakota	9	22	4	0	0	0	0	0	0	0	1
Nebraska	0	12	12	0	0	0	0	0	0	0	0
Kansas	28	32	32	0	0	0	1	0	0	0	1
SOUTH ATLANTIC											
Delaware	0	1	1	0	0	0	0	0	0	0	0
Maryland [1]	32	78	61	0	0	2	0	0	0	0	0
District of Columbia	7	4	9	0	0	0	0	0	0	0	0
Virginia	51	41	71	0	0	505	0	6	4	0	3
West Virginia	10	13	13	0	0	0	0	0	0	0	0
North Carolina	43	94	80	0	1	0	0	0	0	7	0
South Carolina	73	67	63	3	82	0	0	1	0	8	0
Georgia	32	9	20	1	6	1	0	3	0	33	1
Florida	5	1	2	1	3	0	0	0	0	3	0
EAST SOUTH CENTRAL											
Kentucky	44	25	40	0	0	2	0	0	0	0	0
Tennessee	22	20	34	0	0	9	0	1	0	2	0
Alabama	3	8	8	0	0	0	0	0	0	24	0
Mississippi [1]				0	0	0	0	0	1	10	7
WEST SOUTH CENTRAL											
Arkansas	8	17	14	9	4	0	0	2	3	0	1
Louisiana	8	4	4	0	2	0	0	0	0	12	0
Oklahoma	13	2	8	0	8	0	1	2	0	0	2
Texas	134	126	127	5	658	28	0	0	0	33	17
MOUNTAIN											
Montana	0	73	8	0	0	0	0	0	1	0	0
Idaho	4	0	0	0	0	0	0	1	0	0	0
Wyoming	1	12	6	0	0	0	0	0	0	0	0
Colorado	57	30	30	0	0	0	0	0	0	0	1
New Mexico	1	11	11	0	6	0	0	0	1	0	1
Arizona	4	3	3	0	0	15	0	0	0	0	2
Utah [1]	11	15	24	0	0	0	0	0	0	0	0
Nevada	0	0	0	0	0	0	0	0	0	0	0
PACIFIC											
Washington	26	16	25	0	0	0	0	0	0	0	0
Oregon	8	17	17	1	0	0	0	0	0	0	2
California	105	47	114	1	0	0	10	0	0	0	2
Total	1,991	1,653	2,542	42	797	571	18	18	11	132	77
Same week, 1944	1,653			30	461	386	17	18	11	171	63
Average, 1942-44	2,364			35	399	328	20	[2]12	13	[2]134	
36 weeks: 1945	90,860			1,316	18,020	7,554	355	404	550	3,182	3,330
1943	68,301			1,209	15,621	6,026	459	407	408	3,262	2,522
Average, 1942-44	113,071		[2]130,991	1,164	11,171	5,518	446	[2]406	576	[2]2,232	

[1] Period ended earlier than Saturday.

[2] 5-year median, 1940-44.

Anthrax: Georgia, 1 case.

NOTIFIABLE DISEASES, SECOND QUARTER 1945 [1]

The figures in the following table are the totals of the monthly morbidity reports received from the State health authorities for April, May, and June 1945. These reports are preliminary and the figures are therefore more or less incomplete. In most instances they include cases reported in both civilian and military populations. The comparisons made are with similar preliminary reports; but owing to population shifts and the presence of large military populations in certain States, the figures for some States are not comparable with those for prior years, especially for certain diseases. Each State health officer has been requested to include in the monthly report for his State all diseases that are required by law or regulation to be reported in the State. The lists of diseases required to be reported are not the same for each State. Only 11 of the common communicable diseases are notifiable in all the States. In some instances cases are reported, in some States, of diseases that are not required by law or regulation to be reported, and the figures are included although manifestly incomplete. There are also variations among the States in the degree of completeness of reporting of cases of the reportable diseases. As compared with the deaths, incomplete case reports are obvious for such diseases as malaria, pellagra, pneumonia, and tuberculosis, while in many States other diseases, such as puerperal septicemia and Vincent's infection, are not reportable.

In spite of these known deficiencies, however, these monthly reports, which are published quarterly and annually in consolidated form, have proved of value in presenting early information regarding the reported incidence of a large group of diseases and in indicating a trend by providing a comparison with similar preliminary figures for prior years. To some extent they also give a picture of the geographic prevalence of certain diseases, as the States are arranged by geographic location.

Leaders are used in the table to indicate that no case of the disease was reported.

Consolidated monthly State morbidity reports for April, May, and June 1945

Division and State	Anthrax	Chickenpox	Conjunctivitis [2]	*Diphtheria	Dysentery, amebic	Dysentery, bacillary	Dysentery, undefined	Encephalitis, infectious	German measles	Hookworm disease	Influenza	Malaria [3]	*Measles	*Meningitis, meningococcus	Mumps	Ophthalmia neonatorum	Pellagra	Pneumonia all forms
NEW ENGLAND																		
Maine		702		3					81		19	5	24	6	513			196
New Hampshire		159							38		1		207	5	123			14
Vermont		768		7					842			2	248	1	1,284			2
Massachusetts		3,367	79	52	3	20		2	501			362	3,137	58	6,330	47		723
Rhode Island		352		2		4		2	4		485	17	141	11	394			80
Connecticut		2,266	14	16	1			1	219	1	35	23	1,396	23	1,418			710
MIDDLE ATLANTIC																		
New York	1	8,499		125	54	107		7			[4] 21	372	1,665	244	[4] 2,171	20		4,188
New Jersey		7,129		34	7	2		1	1,223		41	344	744	70	3,307	4		708
Pennsylvania	5	6,454		96	3			2			15		5,874	142	5,293	4		889
EAST NORTH CENTRAL																		
Ohio		4,143		75	3	3	1	4	633		62	14	838	111	1,856	114		696
Indiana		651	1	70	2		6		102	1	72	160	458	37	814			65
Illinois		3,293		48	21	17		17	433		42	1	3,447	185	2,821	125		1,489
Michigan		4,796	103	124	14	10			615	1	21	171	2,992	74	2,898	10		585
Wisconsin		7,618		20	1			3			316	25	1,015	36	6,191			186

WEST NORTH CENTRAL																	
Minnesota		2,463	1	58	[5] 29	5	5				22	20	163	27		1		59
Iowa		711		39					12			240	683	31	1,181			537
Missouri		444		48			3	1	31		37	136	329	77	745			321
North Dakota		228	2	22			1	3			62	1	44	3				271
South Dakota		280		18				1					230	6	71			39
Nebraska		462		26				1			35	1	512	10	306			79
Kansas		983	31	68	2	1	1	3	279		17	522	560	25	2,229			176
SOUTH ATLANTIC																		
Delaware		46		10								19	45	5	137			5
Maryland		966	8	115	3	3	1		269		11	192	355	38	932	3		396
District of Columbia		354		7		3					3	71	73	17	120			158
Virginia		1,122		53	3		767	1			1,142	284	556	67	444		1	434
West Virginia		302		26	3	1		2			122	58	355	20	108			24
North Carolina				76	2	5		4				70	583	43				
South Carolina		850		74	47	393			264	268	2,028	2,736	329	22	1,363	7	220	994
Georgia		373	4	37	7	54	17			962	269	264	189	23	506		9	125
Florida		448	15	29	18	7	4		64	933	38	207	184	45	408	5	4	301
EAST SOUTH CENTRAL																		
Kentucky		276		27	1			1			9	342	370	37	401		1	248
Tennessee		354		30	6		14	5	44		236	49	702	69	723	3	6	434
Alabama		389		74	13			2	257		232	775	138	60	473		9	615
Mississippi		2,175		75	316	3,200				1,169	5,886	5,392	5,855	41	2,960	17	612	2,729
WEST SOUTH CENTRAL																		
Arkansas		308		26	10	33		1	361	7	263	574	515	36	751		6	621
Louisiana		129		51	43	15		1	60	96	97	478	627	31	217	12	1	746
Oklahoma		134		46	2	7		1			636	395	466	22	241		2	301
Texas		4,904		374	144	4,731	679	7			7,377	2,366	5,365	117	4,210	19	199	2,319
MOUNTAIN																		
Montana		467	77	11	1			2	87		96		131	6	470			61
Idaho		251	14	4	2	2			55		9		170	4	163			8
Wyoming		148	19	2	1				18			1	101	2	81			30
Colorado		981		74		3			13		225	[7] 376	252	7	1,121			257
New Mexico		161	10	35	4	6	5		11		17	32	138	4	99		3	188
Arizona		454		26	6	2	256	2	140		662	47	192	4	184		2	357
Utah		1,552		1				1	257		112	42	2,890	6	1,574			53
Nevada		45	9		2		6				257		46		98			15
PACIFIC																		
Washington		2,722	23	85	1	2	131	4	427		33	2	2,722	35	2,440			431
Oregon		716		48			8	2			94	6	935	17	465			153
California		18,591	6	277	34	56		10	6,283		181	623	18,196	204	15,703			867
Total	6	94,986	416	2,644	809	8,692	1,905	94	13,623	3,438	21,338	17,817	67,187	2,164	76,337	391	1,075	[6] 24,883
Second quarter, 1944	10	108,042	459	2,440	697	9,676	1,726	155	21,103	4,121	23,340	14,540	289,419	4,706	73,375	480	1,458	29,787
Median, 1940–44	18	96,427		2,522	796	7,633	1,045	155	76,053	4,769	24,028	15,816	289,419	1,076	77,268	437	1,971	31,430
Hawaii Territory		586	8	6	11	67			73	53	3,635	70	919	9	170			35
Panama Canal Zone [8]		48		15	11	10						219	15	1	10			[9] 84

See footnotes at end of table.

Consolidated monthly State morbidity reports for April, May, and June 1945—Continued

Division and State	*Poliomyelitis	Rabies in man	Rheumatic fever	Rocky Mountain spotted fever	*Scarlet fever	Septic sore throat	*Smallpox	Tetanus	Trachoma	Trichinosis	*Tuberculosis, all forms	Tuberculosis, respiratory	Tularemia	*Typhoid and paratyphoid fever	Paratyphoid fever	Typhus fever, endemic	*Undulant fever	Vincent's infection	*Whooping cough
NEW ENGLAND																			
Maine	1				584	3		1		3	138	123	1	2			11	2	608
New Hampshire	1				323	16					36						3	3	85
Vermont	2				162						12			1			22	8	283
Massachusetts	5				3,897	49		2		7	767	726		31	27		10		1,801
Rhode Island	1		76		289	5					243	234		3	1		4	1	238
Connecticut	7				722	149		2		4	388	372		5			30		618
MIDDLE ATLANTIC																			
New York	93			7	[10] 7,714			4		4	3,508	3,291		46	15	3	71		2,829
New Jersey	17			8	1,464	27		4		10	922			10	2		25		1,677
Pennsylvania	13		324	4	5,925			1		1	1,107			56			40		2,446
EAST NORTH CENTRAL																			
Ohio	27	1	1		3,964	8	5	4	6	2	1,514	1,457	1	35	3	2	25	3	1,858
Indiana	13		2	8	1,122	11	18	4	4		741	711	1	23			11	40	218
Illinois	14	3	79	6	3,124	84	2	2	14		1,378	1,219	10	42	15	1	103	27	637
Michigan	8		93		3,130	147	2	10	1	1	1,505			26	10		98		795
Wisconsin	4				2,380	81	3				682		3	1			71		585
WEST NORTH CENTRAL																			
Minnesota	6		8		1,027	76	1				[4] 368			3			92	19	114
Iowa	3		3	2	504	3	6				244	244	1				27		34
Missouri	4		33		710		3		87		542		5	10			22		247
North Dakota	1		11		272	6	5	1	4		68	64		8			2	10	28
South Dakota					174	3	1		10		135			1			16		27
Nebraska	2				718		1				60						1		41
Kansas				1	806	1	6	2			181	165	3	6			48	18	363
SOUTH ATLANTIC																			
Delaware	1			1	64			1			52	52		2					14
Maryland	5		59	26	1,527	55		2		2	1,038	1,007		9	2		7	8	882
District of Columbia	4			1	345						444	390		7	1				121
Virginia	16			15	893	554		4			948	948	11	33	3	2	8		884
West Virginia	7			7	527	2					389		1	16		1	6		227
North Carolina	14	1		11	707	13					1,019	985	4	25	1	23	3		2,241
South Carolina	42		106	3	102		1	1			240		2	30	7	32	8		948
Georgia	18	2	9	5	281	58	4	7			396	396	17	67	12	140	58	28	244
Florida	21				69	7		10			283	195		46	13	106	6	35	139
EAST SOUTH CENTRAL																			
Kentucky	7	1		3	505	3					564	548	3	47	1	1	7		489
Tennessee	20			6	421	30	2	8	1		1,114		12	52	2	4	5	34	327
Alabama	51				185			10	1		677		2	51	3	97	29		393
Mississippi	7				126				14		404	391	14	26		31	17		2,554

WEST SOUTH CENTRAL																			
Arkansas	5				102	169	4	1	76		294	282	36	42	1	3	11		151
Louisiana	8		104		154	115	6	14			720	691	4	41	3	63	25		75
Oklahoma	9			2	246	48	4	1	24		616		7	9		1	10	2	212
Texas	266				930	457	6		34		1,630		4	130	12	427	213		3,678
MOUNTAIN																			
Montana	1		6	2	193	42		1	14		95	34	3	11	4		2	12	67
Idaho				1	232	15	1		1		28		1	10			8	2	47
Wyoming				11	158	21	2				6		3	2				1	35
Colorado	3		78	10	569	87	2				292		1	5			23	50	415
New Mexico					185	2	2		6		[5] 678	[5] 656		12			1		115
Arizona			5		402		1		44		355			16			3		316
Utah	10		72	2	236		3				54	51	16	4			48		458
Nevada				4	13	10	1		4		47			1			2	9	5
PACIFIC																			
Washington	11		78		916	80	2				735		1	9			6	103	267
Oregon	2			3	322	10	2				258			8			43		261
California	57	1	308		4,678		5	16	7	5	3,186	3,001		28	5	3	78		5,863
Total	807	9	1,455	149	54,099	2,447	101	113	352	39	31,101	18,233	167	1,048	143	940	1,359	415	36,960
Second quarter, 1944	628	10	917	162	65,856	1,961	100	89	845	94	35,661	19,087	159	1,149	140	823	1,108	642	27,806
Median, 1940–44	416	10		191	43,121	2,886	262	102	845	95	30,289	17,995	241	1,317		464	958	484	51,886
Hawaii Territory	1				40	2		6	1		281	243		11	7	26	3		4
Panama Canal Zone [9]											[9] 26	[9] 26		8	4				[9] 9

*Diseases marked with an asterisk (*) are reportable by law or regulation in all the States, including the District of Columbia. Typhoid fever is reportable in all the States; paratyphoid fever in all except 6 States. Syphilis is reportable in all the States and the District of Columbia but is not included in the table. Conjunctivitis was dropped from the list of reportable diseases in North Carolina on Jan. 1, 1945.

[1] For reports for first quarter of 1945 see page 622 of the PUBLIC HEALTH REPORTS of June 1, 1945.
[2] Includes cases of kerato and suppurative conjunctivitis and of pink eye.
[3] In some States practically all in the military.
[4] New York City only.
[5] Includes nonresidents.
[6] Includes 508 cases delayed reports for 26 weeks.
[7] Exclusive of prisoners of war.
[8] Includes the cities of Colon and Panama.
[9] In the Canal Zone only.
[10] Includes septic sore throat.

The following list includes certain rare conditions, diseases of restricted geographical distribution, and those reportable in or reported by only a few States:

Actinomycosis: Michigan 2, Minnesota 1.
Botulism: Illinois 1, Arizona 4, California 6.
Coccidioidomycosis: Arizona 2, California 11.
Colorado tick fever: Wyoming 2, Colorado 31.
Dengue: South Carolina 3, Texas 12, California 1, Hawaii Territory 11.
Dermatitis: New Hampshire 8.
Diarrhea: New Jersey 2, Ohio 81 (diarrhea and enteritis), Indiana 1, Michigan 8, Maryland 14, South Carolina 4,072, Florida 10, New Mexico 32, Utah 6, California 5.
Dog bite: Illinois 3,701, Michigan 2,986, Arkansas 197.
Food poisoning: Indiana 3, Illinois 102, Minnesota 33, Louisiana 5, New Mexico 1, Nevada 1, Washington 5, California 188.
Granuloma (unspecified): Ohio 13.
Granuloma inguinale: Missouri 4, Florida 64, Tennessee 16, Mississippi 142, Louisiana 15.
Impetigo contagiosa: Indiana 10, Illinois 20, Michigan 188, Iowa 1, Missouri 2, North Dakota 1, Kansas 6, Maryland 2, Montana 4, Wyoming 3, Colorado 1, Nevada 30, Washington 77, Hawaii Territory 34.
Jaundice (including hepatitis and Weil's disease): Massachusetts 1, Indiana 8, Illinois 135, Michigan 47, Minnesota 2, Iowa 3, Kansas 3, Maryland 5, South Carolina 8, Florida 9, Louisiana 1, Montana 1, Idaho 11, Washington 36, Oregon 6, California 68, Hawaii Territory 47.
Leprosy: Connecticut 1, Illinois 1, Louisiana 1, Texas 4, Washington 1, California 6, Hawaii Territory 4.
Lymphocytic choriomeningitis: Tennessee 12, Utah 1.
Lymphogranuloma venereum: Missouri 4, Florida 39, Tennessee 22, Louisiana 35, Utah 2.
Plague (human): Hawaii Territory 1 (proved fatal).
Psittacosis: New York 2, Pennsylvania 3.
Puerperal septicemia: Tennessee 1, Mississippi 43, Louisiana 6, Nevada 1.
Rabies in animals: New York 139, Ohio 269, Illinois 142, Michigan 12, Iowa 14, Missouri 21, Kansas 2, Maryland 12, District of Columbia 41, South Carolina 44, Florida 2. Alabama 208, Arkansas 52, Louisiana 20, Texas 185, New Mexico 2, Utah 14, California 264.
Rat bite fever: Louisiana 1.
Relapsing fever: Texas 1.
Ringworm: Pennsylvania 208, Michigan 437, Minnesota 339, Iowa 1, Missouri 104, Idaho 1, Nevada 5, Washington 151.
Scabies: Pennsylvania 29, Michigan 201, Missouri 1, North Dakota 5, South Dakota 3, Kansas 16, Delaware 1, Montana 9, Idaho 14, Wyoming 4, Nevada 30.

WEEKLY REPORTS FROM CITIES

City reports for week ended September 1, 1945

This table lists the reports from 88 cities of more than 10,000 population distributed throughout the United States, and represents a cross section of the current urban incidence of the diseases included in the table.

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
NEW ENGLAND												
Maine:												
Portland	0	1	------	0	0	0	2	1	1	0	0	7
New Hampshire:												
Concord	0	0	------	0	0	0	3	0	1	0	0	0
Vermont:												
Barre	0	0	------	0	0	0	0	0	0	0	0	0
Massachusetts:												
Boston	1	0	------	0	6	2	5	21	12	0	0	34
Fall River	0	0	------	0	1	0	0	0	2	0	0	4
Springfield	0	0	------	0	0	0	0	0	0	0	1	0
Worcester	0	0	------	0	2	0	5	0	0	0	0	3
Rhode Island:												
Providence	0	1	------	0	0	0	0	0	0	0	1	10
Connecticut:												
Bridgeport	0	0	------	0	0	0	1	1	0	0	0	0
Hartford	0	0	------	0	0	0	1	0	2	0	0	0
New Haven	0	1	------	0	0	1	0	1	0	0	0	14
MIDDLE ATLANTIC												
New York:												
Buffalo	0	0	------	0	1	0	3	6	3	0	0	0
New York	8	1	2	0	12	1	44	53	13	0	4	132
Rochester	0	0	------	0	2	0	1	18	3	0	0	3
Syracuse	0	0	------	0	0	1	2	0	3	0	0	22
New Jersey:												
Camden	0	0	1	1	0	1	1	1	3	0	0	1
Newark	0	0	1	0	2	0	2	5	2	0	2	14
Trenton	0	0	------	0	0	0	0	[1]6	0	0	0	1
Pennsylvania:												
Philadelphia	1	0	3	0	16	9	9	17	8	0	3	56
Pittsburgh	0	0	1	1	0	2	7	6	2	0	0	16
Reading	0	0	------	0	0	0	0	0	0	0	0	0
EAST NORTH CENTRAL												
Ohio:												
Cincinnati	0	0	1	0	0	3	13	4	2	0	0	8
Cleveland	0	0	------	1	3	0	1	13	7	0	0	65
Columbus	1	0	------	0	0	0	1	0	2	0	0	5
Indiana:												
Fort Wayne	0	0	------	0	2	0	1	1	0	0	0	5
Indianapolis	3	0	------	0	1	0	4	4	1	0	1	3
South Bend	0	0	------	0	0	0	0	0	0	0	0	0
Terre Haute	0	0	------	0	0	0	0	0	0	0	0	0
Illinois:												
Chicago	0	0	------	1	31	4	20	26	21	0	1	59
Springfield	0	0	------	0	0	0	1	0	0	0	0	2
Michigan:												
Detroit	5	0	------	0	10	1	2	6	5	0	0	68
Flint	0	0	------	0	5	0	2	2	0	0	0	0
Grand Rapids	0	0	------	0	0	0	0	0	0	0	1	2
Wisconsin:												
Kenosha	0	0	------	0	0	0	0	0	1	0	0	0
Milwaukee	0	0	------	0	2	0	5	9	6	0	0	2
Racine	0	0	------	0	0	0	0	0	1	0	0	5
Superior	0	0	------	0	0	0	0	0	1	0	0	1
WEST NORTH CENTRAL												
Minnesota:												
Duluth	0	2	------	0	0	0	1	0	2	0	0	0
Minneapolis	1	0	------	0	1	0	1	3	5	0	0	1
Missouri:												
Kansas City	0	0	------	0	1	0	3	1	4	0	0	3
St. Joseph	0	0	------	0	0	0	0	1	0	0	0	0
St. Louis	0	0	2	0	1	0	6	14	8	0	1	14

See footnotes at end of table.

City reports for week ended July 28, 1945—Continued

	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
WEST NORTH CENTRAL—continued												
Nebraska:												
Omaha	0	0	------	0	0	0	1	6	0	0	0	0
Kansas:												
Topeka	0	0	------	0	0	0	1	0	4	0	0	0
Wichita	0	1	------	0	0	0	0	1	0	0	0	1
SOUTH ATLANTIC												
Delaware:												
Wilmington	0	0	------	0	0	0	3	0	0	0	0	1
Maryland:												
Baltimore	6	0	------	0	2	0	5	1	2	0	1	42
Cumberland	0	0	------	0	0	0	0	0	1	0	0	0
Frederick	0	0	------	0	0	0	0	0	0	0	0	0
District of Columbia:												
Washington	0	0	------	0	0	0	6	8	0	0	0	8
Virginia:												
Lynchburg	0	0	------	0	1	0	1	0	1	0	0	3
Richmond	0	0	------	0	0	0	0	9	2	0	0	0
Roanoke	0	0	------	0	0	0	1	0	0	0	0	0
West Virginia:												
Charleston	0	0	------	0	0	0	0	0	2	0	0	0
Wheeling	0	0	------	0	0	0	1	0	0	0	0	0
North Carolina:												
Raleigh	0	0	------	0	0	0	0	1	0	0	0	3
Wilmington	0	0	------	0	2	0	0	0	0	0	0	4
Winston-Salem	0	0	------	0	0	0	0	1	1	0	0	3
South Carolina:												
Charleston	0	0	2	0	0	0	1	0	0	0	0	0
Georgia:												
Atlanta	0	0	------	0	0	0	1	0	0	0	0	0
Brunswick	0	0	------	0	0	0	0	0	0	0	0	0
Savannah	0	0	------	0	0	0	1	3	0	0	0	0
Florida:												
Tampa	3	0	------	0	0	0	1	0	1	0	0	1
EAST SOUTH CENTRAL												
Tennessee:												
Memphis	0	0	------	0	4	0	1	3	3	0	0	7
Nashville	0	0	------	0	0	0	1	2	2	0	0	8
Alabama:												
Birmingham	0	0	2	0	0	0	2	2	1	0	1	0
Mobile	1	0	------	0	0	0	0	0	0	0	0	0
WEST SOUTH CENTRAL												
Arkansas:												
Little Rock	1	0	------	0	0	0	0	0	0	0	0	0
Louisiana:												
New Orleans	0	0	5	3	1	0	5	9	1	0	1	3
Shreveport	2	0	------	0	0	0	2	3	0	0	1	0
Texas:												
Dallas	1	0	------	0	0	0	1	1	3	0	0	1
Galveston	1	0	------	0	0	0	1	0	0	0	0	0
Houston	3	0	------	0	0	0	3	9	1	0	0	1
San Antonio	0	0	------	0	0	2	2	3	0	0	0	2
MOUNTAIN												
Montana:												
Billings	0	0	------	0	0	0	0	0	1	0	1	0
Great Falls	0	0	------	0	0	0	1	0	0	0	0	0
Helena	0	0	------	0	0	0	0	0	1	0	0	0
Missoula	0	0	------	0	0	0	0	0	0	0	0	0
Idaho:												
Boise	0	0	------	0	0	0	0	0	0	0	0	0
Colorado:												
Denver	0	0	1	0	2	1	8	6	2	0	0	12
Pueblo	0	0	------	0	1	0	0	0	0	0	0	5
Utah:												
Salt Lake City	0	0	------	0	6	0	3	12	0	0	0	11

City reports for week ended July 28, 1945—Continued

	Diphtheria cases	Encephalitis, infectious, cases	Influenza: Cases	Influenza: Deaths	Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
PACIFIC												
Washington:												
Seattle	0	0	------	0	5	1	4	2	2	0	0	14
Spokane	2	0	------	0	1	0	2	1	4	0	2	1
Tacoma	0	0	------	0	10	0	0	0	0	0	0	0
California:												
Los Angeles	5	0	5	0	11	3	2	8	12	0	2	23
Sacramento	0	0	------	0	0	0	1	0	5	0	0	7
San Francisco	1	0	1	1	23	0	6	2	8	0	0	4
Total	46	7	27	8	168	32	215	[1] 313	181	0	24	725
Corresponding week, 1944	43	------	19	7	99	------	184	------	191	0	36	478
Average, 1940–44	43	------	27	[2] 8	[3] 173	------	[2] 215	------	201	0	38	942

[1] Exclusive of 2 cases for week ended August 18, delayed report, Trenton, New Jersey.
[2] 3-year average 1940–42. [3] 5-year median 1940–44.

Dysentery, amebic.—Cases: New York 6; Detroit 1.
Dysentery, bacillary.—Cases: Providence 3; Buffalo 1; New York 6; Chicago 1; Detroit 2. St. Louis 2; Charleston, S. C. 8; Nashville 1; Los Angeles 4.
Dysentery, unspecified.—Cases: San Antonio 4.
Rocky Mountain spotted fever.—Cases: Philadelphia 1.
Typhus fever, endemic.—Cases: Wilmington, N. C. 1; Charleston, S. C. 8; Atlanta 4; Savannah 7; Tampa 1; Birmingham 4; Little Rock 1; New Orleans 3; Houston 3; San Antonio 4.

Rates (annual basis) per 100,000 population, by geographic groups, for the 88 cities in the preceding table (estimated population, 1943, 34,086,800)

	Diphtheria case rates	Encephalitis, infectious, case rates	Influenza: Case rates	Influenza: Death rates	Measles case rates	Meningitis, meningococcus, case rates	Pneumonia death rates	Poliomyelitis case rates	Scarlet fever case rates	Smallpox case rates	Typhoid and paratyphoid fever case rates	Whooping cough case rates
New England	2.6	7.8	0.0	0.0	24	7.8	44.4	62.7	47	0.0	5.2	188
Middle Atlantic	4.2	0.5	3.7	0.9	15	6.5	31.9	51.8	17	0.0	4.2	113
East North Central	5.5	0.0	0.6	1.2	33	4.9	30.4	39.5	29	0.0	1.8	137
West North Central	2.3	6.8	4.5	0.0	7	0.0	29.3	58.6	52	0.0	2.3	43
South Atlantic	14.7	0.0	3.3	0.0	8	0.0	34.3	37.6	16	0.0	1.6	106
East South Central	5.9	0.0	11.8	0.0	24	0.0	23.6	41.3	35	0.0	5.9	89
West South Central	23.0	0.0	14.3	8.6	3	5.7	40.2	71.7	14	0.0	5.7	20
Mountain	0.0	0.0	7.9	0.0	71	7.9	95.3	143.0	32	0.0	7.9	222
Pacific	12.7	0.0	9.5	1.6	79	6.3	23.7	20.6	49	0.0	6.3	77
Total	7.1	1.1	4.1	1.2	26	4.9	33.0	48.0	28	0.0	3.7	111

TERRITORIES AND POSSESSIONS

Puerto Rico

Notifiable diseases—4 weeks ended August 11, 1945.—During the 4 weeks ended August 11, 1945, cases of certain notifiable diseases were reported in Puerto Rico as follows:

Disease	Cases	Disease	Cases
Bilharziasis	2	Ophthalmia neonatorum	3
Chickenpox	24	Poliomyelitis	1
Diphtheria	58	Syphilis	327
Dysentery, unspecified	30	Tetanus	13
Filariasis	1	Tetanus, infantile	1
Gonorrhea	271	Tuberculosis (all forms)	486
Influenza	20	Typhoid and paratyphoid fever	28
Leprosy	2	Typhus fever (murine)	22
Malaria	178	Whooping cough	55
Measles	29	Yaws	1

FOREIGN REPORTS

CANADA

Provinces—Communicable diseases—Week ended August 18, 1945.—During the week ended August 18, 1945, cases of certain communicable diseases were reported by the Dominion Bureau of Statistics of Canada as follows:

Disease	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Chickenpox		2		15	60	4	9	21	32	143
Diphtheria		7	4	21	1	4				37
Dysentery, bacillary									4	4
German measles					4		1	3	3	11
Influenza		6			22					28
Measles			1	10	74	2	4	6	25	122
Meningitis, meningococcus								1		1
Mumps		2	1	6	14	12	3	25	6	69
Poliomyelitis					[1] 14					[1] 14
Scarlet fever	6	4	4	35	24	10	1	7	4	95
Tuberculosis (all forms)		21	4	141	36	15	26	19	22	284
Typhoid and paratyphoid fever				8	5	1			1	15
Undulant fever				2	1					3
Venereal diseases:										
Gonorrhea	1	25	12	91	200	44	68	37	62	540
Syphilis		2	5	73	53	6	11	8	21	179
Whooping cough		2	2	141	61	2		3	4	215

[1] Includes 1 case, delayed report.

CUBA

Habana—Communicable diseases—4 weeks ended August 18, 1945.—During the 4 weeks ended August 18, 1945, certain communicable diseases were reported in Habana, Cuba, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Diphtheria	3		Tuberculosis	7	
Malaria	1		Typhoid fever	27	4
Scarlet fever	1	1			

Provinces—Notifiable diseases—4 weeks ended August 11, 1945.—During the 4 weeks ended August 11, 1945, cases of certain notifiable diseases were reported in the Provinces of Cuba as follows:

Disease	Pinar del Rio	Habana [1]	Matanzas	Santa Clara	Camaguey	Oriente	Total
Cancer			3	4		16	23
Chickenpox			1		1		2
Diphtheria		5	2	3	2	4	16
Hookworm disease		19		1			20
Leprosy		1	1			3	5
Malaria	3	1		1	3	145	153
Measles		1				3	4
Poliomyelitis						1	1
Rabies in man						1	1
Scarlet fever		1					1
Tuberculosis	16	24	30	59	41	46	216
Typhoid fever	34	94	33	106	87	75	429

[1] Includes the city of Habana.

FINLAND

Helsinki—Typhoid fever.—Information dated September 7, 1945, stated that the epidemic of typhoid fever was continuing, with 155 new cases reported on September 5 and 115 cases reported on September 6, 1945. The total number of cases reported in Helsinki to the latter date is 2,472, with additional cases reported in other cities. (See also PUBLIC HEALTH REPORTS, Sept. 14, 1945, p. 1099.)

WORLD DISTRIBUTION OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

From medical officers of the Public Health Service, American consuls, International Office of Public Health, Pan American Sanitary Bureau, health section of the League of Nations, and other sources. The reports contained in the following tables must not be considered as complete or final as regards either the list of countries included or the figures for the particular countries for which reports are given.

CHOLERA

[C indicates cases; P, present]

NOTE.—Since many of the figures in the following tables are from weekly reports, the accumulated totals are for approximate dates.

Place		January–June 1945	July 1945	August 1945—week ended—			
				4	11	18	25
ASIA							
China:							
Hupeh Province	C		14				
Kweichow Province—Kweijang	C		12				
Szechwan Province—							
Chengtu	C	P	9				
Chungking	C	8,000					
Hsin Chiaco	C	1					
Hsin Kai Shih	C	1					
Kiang Pei	C	1					
Kweyang	C	26					
Nei Kiang	C	200					
Pi Shan	C	40					
Yunnan Province	C	P					
India	C	133,347	32,317				
Bombay	C	47	15	13			
Calcutta	C	4,203	460	40	62	57	
Cawnpore	C	120	29	8	14	10	
Chittagong	C	17			1	1	
Delhi	C	57	105	20	19	17	
Madras	C	49		2			
Vizagapatam	C	13	10	3	2	1	
Indochina: Cochinchina	C	P					

PLAGUE

[C indicates cases; D, deaths; P, present]

Place		January–June 1945	July 1945	August 1945—week ended—			
				4	11	18	25
AFRICA							
Algeria	C	[1] 12			1		
Basutoland	C	4					
Bechuanaland	C	7					
Belgian Congo	C	8	3		2	2	1
British East Africa:							
Kenya	C	[2] 11	25	3		5	
Uganda	C	6					
Egypt	C	172					
Ismailiya	C	72	10	1			
Port Said	C	53	15	2	2	3	5
Suez	C	16	3				
French West Africa	C	5					
Dakar	C	1					
Madagascar	C	112	1				
Morocco (French)	C	501	174			[3] 97	
Senegal	C	54					
Tunisia	C	3					
Union of South Africa	C	7					
ASIA							
China:							
Foochow	C	30					
Yunnan Province [4]	C	P					
India	C	18,088	390				
Iraq	C	34					
Palestine	C	12	1	1		1	2
Plague-infected rats		17					
EUROPE							
France: Corsica—Ajaccio	C	6	2				
Great Britain: Malta	C	4	[5] 14	1	1	3	2
Portugal: Azores	C	5	3		4		
Spain: Canary Islands	C	1					
NORTH AMERICA							
Canada: Alberta Province: [6]							
Plague-infected squirrels		1	1				
SOUTH AMERICA							
Argentina:							
Buenos Aires Province—Plague-infected rats		2					
Santiago del Estero Province	C	1					
Bolivia: Santa Cruz Department	C	[7] 75					
Ecuador:							
Chimborazo Province	C	6					
Loja Province	C	2	11				
Peru:							
Ancash Department	C	1					
Ica Department	C	[8] 3	1				
Lambayeque Department	C	13					
Libertad Department	C	10	1				
Lima Department	C	11	2				
Otuzco Department	C	3					
Piura Department	C	4					
OCEANIA							
Hawaii Territory	D	[9] 1					
Plague-infected rats [10]		10	2				

[1] Includes 4 cases of pneumonic plague.
[2] Includes 5 suspected cases.
[3] For the period Aug. 1–20, 1945.
[4] Information dated July 5, 1945, stated that from April 1944 to May 1945, 85 deaths from plague had occurred in the mountainous region south of Kunming, China.
[5] Includes 4 suspected cases.
[6] During the month of June 1945, plague infection in fleas was reported in Alberta Province. For the week ended July 28, 1945, plague infection was also reported in 6 pools of fleas in Alberta Province. For the week ended Aug. 11, 1945, 2 pools of plague-infected fleas were reported in Alberta Province, Canada.
[7] Includes 6 suspected cases.
[8] Includes 1 suspected case.
[9] Previously reported as a case, death occurring on June 2, 1945.
[10] Plague infection was also proved positive in a pool of 5 mice on Jan. 4, in a pool of fleas on Feb. 14, and in a pool of 40 fleas on Mar. 14, 1945.

SMALLPOX

[C indicates cases; P, present]

Place		January–June 1945	July 1945	August 1945—week ended — 4	11	18	25
AFRICA							
Algeria	C	153	11				
Angola	C	81					
Basutoland	C	320	24				
Belgian Congo	C	4,981	203	79	24		
British East Africa:							
Kenya	C	154	12	2			
Nyasaland	C	9					
Tanganyika	C	2,853	381				
Uganda	C	669	155				
Cameroon (French)	C	334	49			[1] 366	
Dahomey	C	103	14			[1] 33	
Egypt	C	1,008	40	4			
French Equatorial Africa	C	1,526	10				
French Guinea	C	1,423	53				
French West Africa: Dakar District	C	384	6				
Gambia	C	81	1				
Gold Coast	C	29	25	25	4		30
Ivory Coast	C	422	46				
Libya	C		6				
Mauritania	C	80	3				
Morocco (French)	C	470	637			[1] 64	
Nigeria	C	3,363					
Niger Territory	C	446	26				
Rhodesia, Northern	C	874	566				
Senegal	C	447	40				
Sierra Leone	C	23	8				
Sudan (Anglo-Egyptian)	C	[2] 3					
Sudan (French)	C	1,622	304			[1] 92	
Togo (British)	C	25					
Togo (French)	C	457	25				
Tunisia	C	2					
Union of South Africa [3]	C	1,270	P	P			
ASIA							
Arabia	C	22					
Ceylon	C	[4] 379	37		95		
China	C	696					
India	C	207,473	10,182				
Iran	C	390					
Iraq	C	36			1	1	
Syria and Lebanon	C	6	2				
Turkey (see Turkey in Europe).							
EUROPE							
Belgium	C	1					
France	C	4	22				
Great Britain: Scotland	C	[2] 2					
Italy	C	1,561	21				
Sicily	C	6					
Portugal	C	19	4				
Spain	C	30					
Canary Islands	C	1					
Turkey	C	289	2				
NORTH AMERICA							
Canada	C	6					
Guatemala	C	4					
Honduras	C	8					
Mexico	C	1,066					
Nicaragua	C	123	[5] 13				
SOUTH AMERICA							
Bolivia	C	293	200				
Brazil	C	[5] 139	[5] 14				
Columbia	C	211	47	9			
Ecuador	C	21	1				
Paraguay	C	1					
Peru	C	39					
Uruguay	C	19	67				
Venezuela	C	[5] 485	[5] 24				[5] [6] 28

[1] For the period Aug. 1–20, 1945.
[2] Imported.
[3] For the week ended June 30, 1945, cases of virulent smallpox were reported in the Union of South Africa.
[4] Includes some cases of chickenpox.
[5] Includes cases of alastrim.
[6] For the month of August.

TYPHUS FEVER*

[C indicates cases; P, present]

Place		January–June 1945	July 1945	August 1945—week ended—			
				4	11	18	25
AFRICA							
Algeria	C	934	20				
Basutoland	C	50	1				
Belgian Congo [1]	C	135	24		27		
British East Africa: Kenya	C	27		2			
Egypt	C	14,539	455	116			
French West Africa: Dakar [1]	C	14	1				
Gold Coast	C	1					
Libya: Tripolitania	C	17		1			
Morocco (French)	C	5,089	1,247			[2] 415	
Nigeria	C	P					
Rhodesia, Northern	C	31					
Sierra Leone	C	3					
Tunisia	C	375	4				
Union of South Africa	C	517	P	P			
ASIA							
China	C	908					
India	C	22					
Iran	C	823					
Iraq	C	192	20	2	5	3	6
Palestine [1]	C	62					
Syria and Lebanon	C	12					
Trans-Jordan	C	42			1		
Turkey (see Turkey in Europe).							
EUROPE							
Albania	C	100					
Austria	C	30	16				
Belgium	C	143	14				
Bulgaria	C	928					
Denmark	C	144	1		1		
France	C	231	32	4			
Germany	C	7,579	293				
Gibraltar	C	4					
Great Britain	C	[3] 21					
Malta and Gozo [1]	C	9					
Greece	C	60	25				
Italy	C	129					
Netherlands	C	158					
Portugal	C	43	4		1		
Rumania	C	[4] 7,831					
Slovakia	C	255					
Spain	C	13					
Sweden	C	220	3				
Switzerland	C		1				
Turkey	C	2,203	102	17	26	16	27
Yugoslavia	C	1,194					
NORTH AMERICA							
Canada [1]	C	1					
Costa Rica [1]	C	5	1				
Cuba [1]	C	5	2				
Guatemala	C	1,033					
Jamaica [1]	C	21	3				
Martinique [1]	C					1	
Mexico	C	953					
Panama (Republic)	C	3					
Puerto Rico [1]	C	70	42	8		15	
Virgin Islands [1]	C	8					
SOUTH AMERICA							
Bolivia	C	293					
Brazil	C	1					
Chile [1]	C	304	28				
Colombia	C	20					
Curacao	C	1					
Ecuador	C	229	61				
Peru	C	361					
Venezuela [1]	C	75					
OCEANIA							
Australia [1]	C	75	5				
Hawaii Territory [1]	C	55	6	1	2		

*Reports from some areas are probably murine type, while others probably include both murine and louse-borne types.

[1] Reports cases as murine type.

[2] For the period August 1–20, 1945.

[3] Includes imported cases.

[4] For the period Jan. 1–20, 1945.

YELLOW FEVER

[C indicates cases; D, deaths]

Place		January–June 1945	July 1945	August 1945—week ended—			
				4	11	18	25
AFRICA							
Gold Coast:							
Nsawam	C	2	[1] 1				
Takoradi	C	1					
Winneba	C	1		1	[1] 1		1
Ivory coast:							
Gaoua	C	1					
Guiglo	C	1					
Sierra Leone: Moyamba	C	2					
SOUTH AMERICA							
Brazil:							
Goiaz State	D	76					
Minas Geraes State	D	25					
Para State	D		1				
Colombia:							
Magdalena Department	D		2				
Santander de Norte Department	D	10	1				
Peru:							
Cuzco Department	C	3					
Loreto Department	C	1					
Venezuela:							
Bolivar State	C	1					
Merida State	C		2				
Tachira State	D	14	6				
Zulia State	C		6				

[1] Suspected.

STUDIES OF TYPHUS FEVER [1]

A Review

National Institute of Health Bulletin No. 183, entitled: "Studies of Typhus Fever" has recently been released for circulation. It represents part of the work on the rickettsial diseases done at the National Institute of Health since the outbreak of the war. After the restrictions on this type of information were lifted, it seemed appropriate to collect the studies on typhus fever and issue them as a report of work accomplished.

The bulletin contains the following articles:

Studies of typhus fever vaccines. By N. H. Topping, I. A. Bengtson, and M. J. Shear.

Section I. Tests on available vaccines.

Section II. On the addition of alum to Cox vaccine.

Section III. Studies of antigens in infected yolk sacs.

Section IV. Studies of the relationship of the abundance of rickettsiae in yolk sacs infected with epidemic and endemic typhus and the complement fixation reaction.

Epidemic typhus: Demonstration of a substance lethal for mice in the yolk sac of eggs infected with *Rickettsia prowazeki*. By I. A. Bengtson, N. H. Topping, and R. G. Henderson.

Notes on the preparation of epidemic typhus vaccine. By N. H. Topping.

Notes on the mouse test with typhus vaccines. By R. G. Henderson.

Epidemic typhus vaccine: Preparation of seed virus for the inoculation of eggs and of lethal material for the neutralization test in mice. By I. A. Bengtson.

Epidemic typhus fever: Neutralization of the toxic substance. By R. G. Henderson and N. H. Topping.

Epidemic typhus fever: A study of the antigenicity of various strains of typhus virus. By N. H. Topping, I. A. Bengtson, and R. G. Henderson.

Epidemic typhus fever: Studies of epidemic typhus vaccine. By N. H. Topping, R. G. Henderson, and I. A. Bengtson.

Technic of a precipitin test for the study of typhus fever. By C. C. Shepard and N. H. Topping.

Typhus fever: Antigens of the rickettsiae of typhus fever and the changes produced by heat. By C. C. Shepard.

INDUSTRIAL HYGIENE BIBLIOGRAPHY [2]

A Review

A bibliography of industrial hygiene covering selected books and articles produced in the years 1900–43 is presented in Public Health Bulletin No. 289.

The bulletin was prepared by the Industrial Hygiene Division, Bureau of State Services, United States Public Health Service, in

[1] Studies of typhus fever. By N. H. Topping, I. A. Bengtson, R. G. Henderson, C. C. Shepard, and M. J. Shear. National Institute of Health Bulletin No. 183. Government Printing Office, 1945. For sale by the Superintendent of Documents, Washington 25, D. C. Price 20 cents.

[2] Bibliography of industrial hygiene, 1900–43; a selected list. Pub. Health Bull. No. 289. Government Printing Office, 1945. For sale by the Superintendent of Documents, Washington 25, D. C. Price 20 cents.

response to demand from industrial hygienists, governmental health and labor personnel, physicians, industrial management, and labor for dependable references on industrial hygiene subjects.

Part I contains general sources of information in this field, including reference volumes useful to an industrial hygiene library, periodicals representing all phases of industrial hygiene interest and activity, sources from which pamphlets and other reference materials may be obtained, a list of governmental industrial hygiene agencies, educational and research organizations, insurance groups active in industry. and libraries.

Part II is a listing of articles and books on specific industrial hygiene subjects. It includes materials on such problems as absenteeism and morbidity; aviation medicine; dermatoses; dust problems in particular industries, determination and control of dusts, and dust diseases; various other diseases, occupational and nonoccupational, as they apply to industry; eye problems; fatigue; hazardous substances, organic and inorganic, and such substances as are found in particular industries and processes, with methods of sampling and analysis; health education; industrial hygiene services; legislation; ventilation; and women in industry.

A number of important papers which appeared early in 1944, when the bibliography was in preparation, have been included.

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FEDERAL SECURITY AGENCY

UNITED STATES PUBLIC HEALTH SERVICE

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DIVISION OF PUBLIC HEALTH METHODS

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